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REPORT BY THE KARRENBERG PARTY ON

MISCELLANEOUS RUSSIAN W/T

Attached is a translation of a report on (a) Russian army radio traffic, (b) the radio network of the civil air-force, (c) the radio network of the NKRF (People's Commissariat for River Shipping) and (d) call-signs of the NKRF and the civil air-force. It was written at our request by:

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VHP record

(members of KARRENBERG's party) of OKH Gruppe VI, at CSDIC (UK) in September, 1945. This is the third of a series of such reports by KARRENBERG and his party which will be issued by TICOM.

For previous reports see TICOM/I-30, 149, 157, 166 and 167.

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Survey of Russian Army Radio Traffic

Traffic between the General Staff of the RKKA and the Front Staffs was exclusively on two-channel radio teleprinter lines. Front Staffs have no communication with each other. Each Front Staff with the armies subordinate to it forms a radio network. (All stations have links to the front HQ and to each other). Units similar to armies but with special duties (e.g. the so-called Assault Armies) have two-channel radio teleprinter line links with the front HQ to which they are subordinate. They use low frequencies (1.0 to 2.5 mc/s) and their transmissions are modulated, which makes them easy to distinguish from the radio teleprinter links between General Staff and Front Staff. Individual armies form a network with the divisions subordinate to them. (All divisions have traffic with the army and with each other). Divisions again form networks with their regiments. Corresponding to this subdivision, armies, divisions etc have different callsigns in the networks which they control from those which they have in the front HQ networks, army networks etc., (in which they are subordinate stations).

The callsigns are described separately.

Frequencies: radio teleprinter lines: day 6.5 to 12.00 mc/s:
night 2.5 to 6.5 mc/s.

Radio networks: day 3.5 to 10.00 mc/s, night 2.5 to 7.0 mc/s.
The frequencies of the stations of a network are usually close together. On the average a normal network covers a band of 5 mc/s. Radio stations of other networks naturally also lie within this band. Intensity of traffic, particularly on the frequencies from 2.5 to 4.5 mc/s, is very great at times.

Traffic: All details about radio teleprinter traffic have been described in the appropriate section. Radio morse traffic: almost exclusively hand-keyed. International procedure signals. Until 1941 Russian procedure signals were used throughout; it is possible that they are still being used in a few networks. A few examples:

pr	message follows	ws	very urgent
wr	time	sh	I hear you well
ps	testing communication	ss	I hear you badly
dk	confirmation	ns	I cannot hear you

Change of frequency: "sld na .. = follow me on ...", or "sld na ... = I am following you on....". (A number follows which, multiplied by 25, gives the new working frequency). Procedure signals in the form of 2 figure groups are also often used. Announcement or beginning of message: "qto", in NKVD units: "qoo". (Another recognition characteristic of NKVD radio stations is the separation of preamble and address (or text) by nk, -.-.-)

Messages are either 5-figure, 5-letter, 4, 3 or 2 figure, or mixed. Groups in figure messages are separated by an "r", to avoid the groups running together when carelessly keyed. Words occurring en clair are enclosed by commas.

Example of a normal preamble:

qtc.nr 886 gr 45 20/9 1320-(date and time can also be omitted)

24 67 91 09 35 76-(address may also be missing)

35648 09867

52647 00998 + qsl?

Morse alphabet:

.-	a	а	...-	j	Й	...	s	С	..-	ü	Ю
-...	b	б	..-	k	К	-	t	Т	---	ö	У
-.-.	c	ц	.r..	l	Л	..-	u	У	---	oh	Ш
-..	d	Д	--	m	М	...-	v	Ж	...-	é	Э
.	e	е	-.	n	Н	...-	w	В			
...-	f	Ф	---	o	О	..-	x	Б			
--	g	Г	...-	p	П	...-	y	Ы			
....	h	Х	---.	q	Ц	...-	z	З			
..	i	И	...-	r	Р	...-	ä	Я			

Construction and systematisation of the callsigns used in Russian Army traffic.

The callsigns used in army radio traffic from divisions inclusive upwards have (disregarding a very small number of exceptions) the general form "XXB". In this "X" can be any number (with the exception of zero; zero is not used, as in all Russian radio traffic it is sent only abbreviated - as a "t" - and thus confusion between "t" and zero might arise) or any letter (with the exception of letters "Я", "Ю", "У", "Э", "Ш", "Щ", "Ъ", "Ы", "Ь", "Э", "Ю", "Я"). These letters are omitted for security reasons; the morse characters given after the letters are used only in Russian traffic. A traffic with callsigns containing these letters would thus be immediately recognised as a Russian one). "B" can be any letter, with the exceptions mentioned. A few examples of callsigns:

ado 4fq m5j 27x

The callsigns are arranged in callsign pads. A callsign pad has 26 pages corresponding to the 26 letters used (XXB). Each sheet contains a bigram square with $35^2 = 1225$ positions, corresponding to the 35 figures and letters used (XXB). (See appendix.) The whole pad thus contains $35^2 \cdot 26 = 31850$ positions (= different callsigns). The last element of the callsign (XXB) shows the page of the pad, the first (XXB) the row (horizontal) and the second (XXB) the column (vertical) of the bigram square. If some of the callsigns and the units to which they apply are known (e.g. from Blocknotes or message contents), the units are entered in their appropriate squares. If one now monitors the stations through several callsign changes and again enters the units, regularities in the succession of callsigns may be observed. Callsigns are not retained unchanged for the same period in all networks. In general they change at periods of 2 to 14 days. It is hence not possible for one and the same callsign to be allocated to different units within short intervals of time, which facilitates the work of systematisation. When sufficient positions have been identified, the bigram squares can be gradually completed, so that callsigns can be predicted or a station identified with some

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degree of certainty by its callsign. Naturally such predictions and identifications are never absolutely certain, as possible exceptions always have to be taken into account. A certain identification can only be obtained by a collation of observations from callsigns, Blocknotes and message contents.

In all units of the RKKA from division inclusive upwards the same callsign pad is used during one period. Only the NKVD formations have their own individual pads. Experts on callsigns at Director General of Signals were Oberinsp. Zipper and Wm. Stetter.

Page A of Callsign Pad

	A B C D E	F G H I J	K L M N O	P Q R S T	U V W X Y	Z 1 2 3 4	5 6 7 8 9
A							
B							
C							
D							
E							
F							
G							
H							
I							
J							
K							
L							
M							
N							
O							
P							
Q							
R							
S							
T							
U							
V							
W							
X							
Y							
Z							
1							
2							
3							
4							
5							
6							
7							
8							
9							

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The radio network of the civil air force (АЭРО - ФЛОТ).

International fixed callsigns. Main network: 3 letters, beginning with U, e.g.

UEV Moscow ULA Yalentsk UXH Novosibirsk
UMX Alma-Ata ULC Tumen etc.

Subsidiary networks: 4 letters, beginning with RB. Also 4 letters beginning with RC, and 3 letters beginning with U (however only a few isolated instances).

Aircraft: 5 letters beginning with RP.

Frequencies (in mc/s)

2.4 - 2.8	3.2 - 3.7	4.0 - 4.1
4.6 - 5.0	5.4 - 5.7	6.3 - 6.8
8.3 - 8.7	11.1 - 11.9	12.4 - 13.4

For ground to air traffic frequencies lying between the bands are occasionally used. The main network uses only the 4 upper bands by day, at night the 4th, 5th and 6th band. The subsidiary networks work by day on the 4th and 5th (occasionally also on the 6th) band. At night they use the 1st, 2nd and 3rd bands. Contact traffic is conducted almost exclusively en clair; the Q code is rarely used. Messages are either en clair, clear text mixed with 3/F, pure 3/F 5/F and 5/L. Isolated instance of special systems (3/L, 4/L, higher figure messages or messages with individual such groups) were observed. Messages contained transport reports, preparation of stores, supply of equipment, movement of units of the Aero-Flot (which works in close collaboration with the Soviet Air Force), flying reports, personnel matters, weather reports, take-off and landing reports etc.

Traffic times and frequencies are changed at varying periods (according to the reception conditions at different times of the year). These changes are notified within individual networks by CQ messages.

As in all Russian traffics inside Russia the separation "r" between groups of enciphered messages is not used.

Radio stations have almost without exception hand-keyed traffic; only a few stations of the main network and a few Moscow stations of the subsidiary networks used automatic transmission; their transmissions however can always be taken by hand. In general traffic is very efficient and fast. Traffic times are exactly allocated over the whole network. Break-in working, but two stations in traffic with each other never send their messages at the same time but after each other. A line can thus be listened to on another receiver, which is not the case with Duplex traffic.

The network is, as already mentioned, divided into a main network (10 stations) and several subsidiary networks. The main network is controlled by two Moscow stations. It transmits the most important reports (control network). Individual stations of the main network also have traffic with each other. The subsidiary networks are grouped according to areas. Each subsidiary network has its own control station; however also the subordinate stations of these networks have traffic with each other. It is thus a complete network traffic. For traffic with subsidiary networks two further Moscow stations (RBDT and REFC) operate. There are also ground stations which are not tied to any fixed location but are allocated to mobile units of the Aero-Flot (so-called groups); for example the stations ULZ (Chankotadse Group), RBNO (Raskotadse group). (The Chankotadse group was in the Transcaucasus near Tbilis; the Raskotadse group was allotted to the 3rd Baltic front).

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The network covers the whole of the USSR and comprises about 400 radio stations (without a/o).

Commander of the Aero-Flot is Colonel-General ASTAKHOV.

Message set-up (examples):

iz rbol [or] gurbewa* 254 46 2/9 0910- [Preamble]
 rbfr [or] kujbychew [or] kbch aeroport gulkinu [Address]
[Clear text, clear + 3/F, 3/F, 5/F, etc]..... [Text]
 a/p [= aeroport] efremeew + [Signature]

* Sending and receiving stations were given either as the place in clear, abbreviation of the place (always 3 letters) or as the callsign. The units were occasionally not given in the address and signature. In some 3/F messages signatures in the form of a 4/F group were observed.

The Radio network of the People's Commissariat for river shipping (NKRF).

International fixed callsigns consisting of 3 or 4 letters, beginning with U or R, e.g.

UOM Moscow	RFC Gorkii
ULT Kuibishev	RFA Astrakhan
RFAA Kiev	etc.

Frequencies (in mc/s):

Day 6.3 - 6.5	8.1 - 8.3	11.0 - 11.3
Night 4.0 - 4.4	5.5 - 5.9	6.2 - 6.8

The traffic can hardly be distinguished from international postal traffic. Contact traffic almost exclusively in clear. Q and 2 codes hardly used.

Messages are either in clear or 5/F. They contain principally transport reports, orders for stores, confirmations of delivery and general orders. Contents of the message refer not only to the NKRF but to all the branches of industry using the NKRF transport services.

The separation "r" between groups of enciphered messages used in Soviet Army traffic and one of its principal characteristics, is not used in these traffics.

The stations, especially the larger ones, work almost always with automatic transmission (high-speed morse). Traffic times are fixed. Duplex break-in working.

The network covers the whole of the USSR and comprises about 40 radio stations. Certainly most of the smaller stations were received only with difficulty owing to their great distance, small transmitter output and unfavourable frequencies. The NKRF radio network is linked via the station RFA (Astrakhan) with the network of the People's Commissariat for sea shipping (NKMF) - control station ULN Moscow. Frequencies used, type of traffic and message set-up are the same in both networks.

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Example of a message:

por 1+ iz kujbyohewa 673 23 0109 1620-	[Preamble]
moskwa zemmarkomreöflota lukxänowu-	[Address]
...(clear text or 5/F).....-	[Text]
o 74/845++ ochrek+++ dimitreew +	[Signature]

(The letters in this example are given as they are sent in Morse). In 5/F messages the signature may also be missing (included in the cipher text.).

- + po radio nr 1 = serial no. of messages sent at one traffic time
- ++ traffic routine number
- +++ sender.

Callsigns of NKRF and Aero-Flot

There is no particular difficulty in ascertaining locations of the stations of NKRF and Aero-Flot networks. About 50% of the messages are not sent direct from the station of the sender to the recipient but are passed on, in some cases via three or four stations. For example, suppose that RBUU (Saratov) has some urgent messages for RBFC (Moscow). But the next traffic time between Saratov and Moscow is not until 2 hours later. However Saratov has traffic at that moment with RBFR (Kuibishev) and knows that because of its traffic schedule Kuibishev will be working with Moscow immediately it has finished its traffic with Saratov. So Saratov sends its messages to Kbch.:

iz rbuu 465 68 3/10 1200- moskwa a/p polkowniku
proninu - 465 143 476 - 243/2 gorbaöew +
etc.

On conclusion of traffic Kbch acknowledges receipt of the messages to Srt, calls Msk and begins:

iz saratowa 465 68 3/10 1200- msk a/p proninu -
465 143 476 - 243/2 gorbaöew +
etc.

This shows clearly that RBUU = Saratov. Naturally, one is not always so fortunate as to be able to follow such a pass-on in its entirety. A simple expedient is to collect signatures in conjunction with the callsigns and places which come up with them, i.e. one lists signature with callsign or place of sending of each message. For example:-

RBUU	Gorbaöew	Saratov	Öeöerin
	Öeöerin		Gorbaöew

It is best to have the names in alphabetical order. If one has at least two names which come up together with a callsign and a location, one can certainly say that the callsign = the location. One name alone is not sufficient for identification, as in such a large network there might easily be people with the same name working at different places.

Interception of these traffics was carried out only at Director Gen. Sigint. In January 1944 it was reduced owing to lack of well-trained personnel and in the summer of the same year discontinued completely for the same reason. (Up to January 1944 2 sets were working on NKRF and

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4 on Aeroflot; from January to the summer of 1944 only. 2 sets were taking these traffics). The information on these networks hence only refers to the situation of Summer 1944.

As the Red Army advanced these traffics increased more and more in volume, so that they are probably now considerably greater.

Наркомречфлот. Лукьянов - Замнаркомречфлота.

РПКБ	Усть Уса	УЗФ	Семипалатинск
РФА	Астрахань	УЛТ	Куйбышев
РФАА	Киев	УОМ	Москва
РФЦ	Горький	УУБ	Новосибирск

Аэрофлот.

1.	УЕЖ	Москва	УМЗ	Ташкент
	УДЗ	Саратов	УМБ	Алма-Ата
	УЛА	Якутск	УУФ	Баку
	УЛЦ	Тюмень	УБХ	Новосибирск
2.	РБДВ	Гр. Ключсон	РБФР	Куйбышев
	РБДН	Водогда	РБФС	Астрахань
	РБДТ	Москва	РБФЦ	Москва
	РБЕМ	Горький	РБЦЛ	Гурьев
	РБЗК	Архангельск	РБШВ	Расбойщина
	РБНО	Гр. Расскотадзе	УЛЗ	Гр. Чанкотадзе
	РБУУ	Саратов	УХП	Ленинград
	РБФМ	Чкалов	УБ.	Ленинградской район
	РБЕЛ	Сталинград	УБС	Хвойная